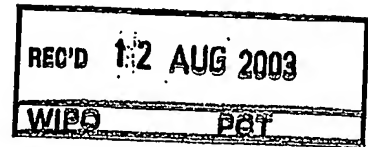


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# Kongeriget Danmark

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Applicants: J. P. Hansens Eff. ApS  
(Name and address) Præstetoften 3  
5471 Søndersø  
Denmark

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*Bo Z. Tidemann*  
Bo Z. Tidemann



PATENT- OG VAREMÆRKESTYRELSEN

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Modtaget

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METHOD OF TREATING A SURFACE, COATING COMPOSITIONS AND  
USE THEREOF AND COATED SURFACES OBTAINABLE BY THE USE

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5 DESCRIPTION

1. BACKGROUND OF THE INVENTION

10 The present invention relates to a method of treating exposed surfaces, e.g.  
for use in protection treatment of e.g. monuments, buildings and  
constructions having surface structures made of i.a. steel, aluminium,  
sandstone, marble, granite, slate, cement, fibre-reinforced cement, bricks,  
tiles, fibre glass-reinforced materials, and wood, as well as public and private  
15 transportation vehicles like busses, trains, trolleys, etc., and road and traffic  
signs, against graffiti and/or pollution, but also for use in anti-fouling  
treatment of ship hulls, and exposed surfaces obtainable by the method, and  
use thereof.

20 As used in the specification and claims, the term "graffiti" means any  
unwanted painting, drawing, lettering or other marking formed on a surface.

Although many countries have adopted strict environmental regulations  
which are intended to protect the environment against pollution from i.a.  
waste and combustion products, formation of deposits on and corrosion of  
25 surfaces of buildings, construction materials, public and private transportation  
vehicles, etc., caused by pollution still continue to cause problems.

Thus, it is desired to prevent formation of and/or remove such deposits of  
waste and combustion products, in particular smog; to prevent formation of  
30 reaction products formed by i.a. acid rains, sulphur oxides, and nitrogen  
oxides; and to provide easy removal of graffiti paintings on such surfaces.

Cleaning of such surfaces to remove pollution deposits, including graffiti, often requires application of high-pressure sand blasting treatments or treatment with hot steam or aggressive and hazardous chemical cleaning agents. Also, following such cleaning treatment the surfaces often have to be  
5 further renovated, and application of new surface treatments or paintings may be required.

Similarly anti-fouling treatment of ship hulls requires frequent cleaning and surface treatment, including high-pressure sand blasting treatments or  
10 treatment with aggressive and hazardous chemical cleaning agents, often followed by application of new paintings and/or fouling agents.

In particular for anti-fouling products, new very strict legislation is coming into force in several countries in order to prevent use of biocides, TBT, and heavy  
15 metals, which are presently polluting the water environment. Therefore, heavy efforts have been done to provide non-poisonous anti-fouling coatings.

Consequently, there is a need for an improved method and means for treating surfaces of buildings, construction materials, public and private  
20 transportation vehicles, ship hulls, etc., whereby less complicated cleaning methods are required to remove pollution or fouling deposits; and whereby application of environmentally hazardous agents, renovation and repainting can be avoided or reduced.

## 25 REVIEW OF PRIOR ART

### PROTECTION AGAINST GRAFFITI AND POLLUTION

A method to counteract graffiti problems is to apply a protective coating onto  
30 a surface to protect it.

There are basically two types of coating.

The first type is a so-called "sacrificial coating" that prevents the transmission of graffiti through the coating and allows removal of the graffiti. However, by the removal process not only the graffiti but also the coating is removed, so that the protective coating must be reapplied after removal of the graffiti.

5

The second type is a so-called "permanent coating" that prevents the transmission of graffiti through the coating, allows removal of the graffiti, and forms a strong bond with the surface allowing removal of the graffiti without removal of the coating.

10

US 4241141 relates to a method for protecting surfaces from being permanently marked by graffiti which comprises coating the surface to be protected with a removable sacrificial coating composition consisting essentially of from 10 to 35% by weight of a polymer having a monomer content of 25 to 70% by weight hard monomer, 15 to 50% by weight soft monomer and 15 to 30% by weight acid monomer, the polymer having been neutralized with sodium hydroxide, potassium hydroxide, or mixtures thereof, from 0 to 15% of a potassium or sodium salt of an adduct of maleic anhydride and a mixed alpha olefin having chain lengths of more than 30 carbon atoms, from 0 to 2% of a coalescing solvent selected from the group consisting of diethylene glycol monoethyl ether, diethylene glycol monobutyl ethyl and mixtures thereof; from 0 to 3% of defoamers, levelling agents, and mixtures thereof; and 90 to 45% by weight of water; the composition having an MFT of less than 30 °C and a pH within the range of from 7.0 to 10.0; and b) allowing the sacrificial coating to dry. However, this coating requires cleaning solutions to remove it.

25

30

It is further mentioned in US 4241141 that the application of the sacrificial coating can be carried out using any suitable application technique including brushing, wiping, rolling or spraying, where after the coating is allowed to dry or cure until it is dry to the touch. The drying step generally requires from about 10 to about 30 minutes although shorter dry time may be possible if the surface is heated to drive off the water.

US 5387434 discloses another removable anti-graffiti coating comprised of (a) a member selected from the group consisting of waxes, sodium silicate, rosins and gums, and combinations thereof, and (b) water.

5

The member (a) is present in an amount from 5% to 80% by weight and in an amount effective to form a graffiti barrier on a surface to which the anti-graffiti coating material is applied. Any graffiti applied to the surface is intercepted by the graffiti barrier and can be removed by power washing the anti-graffiti coating with the graffiti from the surface.

10

The power washing is preferably carried out using water at a temperature within the range 120-194 °F. and a pressure greater than 250 psi. A fresh anti-graffiti coating can be reapplied, as needed, to the washed surface.

15

US 5750269 relates to a removable coating composition useful for protecting concrete, granite, marble, painted surfaces, etc., from graffiti comprising

a) about 10 to 50 weight percent of an oxidized low molecular weight polyethylene wax having an acid number of 10 to 40, a Brookfield Thermosel viscosity of 50 to 2500 cP at 125 °C., and a RBSP of 90 to 130 °C,

20

b) about 10 to 80 weight percent of a paraffin wax having a RBSP of 30 to 75 °C, and

c) about 10 to 80 weight percent of a thermoplastic acrylic copolymer containing 15 to 75 weight percent hard monomer, 20 to 70 weight percent soft monomer, and 0 to 30 weight percent acid monomer.

25

According to a preferred embodiment this composition is further comprising water such that the solids a), b), and c) are in an aqueous emulsion at total solids concentration of about 5 to 50 weight percent.

30

US 5750269 relates also to a process of protecting a structure by applying an antigraffiti coating to the surface of a structure comprising applying the

above-mentioned aqueous coating composition to said surface and drying said composition to remove water.

5 It is mentioned in US 5750269 that this coating composition is easily removable, that it can be coated on any surface that is subject to the application of a coating that is not intended to be permanent (e.g. graffiti), and that this composition can be applied in the form of an emulsion by painting or spraying onto a surface such as concrete, etc. and then dried to form a protective coating for the substrate.

10

It is further mentioned that once a temporary or undesirable coating is applied, the layer of this composition can be easily removed along with the top coating simply by the application of hot water or steam, such as in the form of a spray or jet.

15

US 4348586 relates to a surface treatment process for forming a removable coating protecting against bill-posting, penetration and attachment of graffiti and/or paint, and against the adherence of dust and polluting agents in which the surface is treated by means of an aqueous composition containing at least one synthetic wax of vegetable origin, one microcrystalline wax, or a mixture thereof having a melting point of between 45 °C and 110 °C, followed by applying an anti-adhesive composition containing within an organic solvent without water at least one microcrystalline wax present in an amount of 10 to 30% by weight compared with the total weight of the composition and a silicone oil which is a methylpolysiloxane having a viscosity of 500 to 2,500,000 cs, a methylphenylpolysiloxane with a viscosity of between 10 and 100,000 cs or a mixture thereof present in an amount of 0.01 to 15% by weight compared with the total weight of the anti-adhesive composition.

20

25

30 EP 20577 relates to a removable coating composition. This composition contains in aqueous medium, at least a self emulsible wax having a melting point between 45°C and 110°C. A preferred embodiment comprises the use

of a mixture of a synthetic wax of vegetal origin, a mineral wax and a micro crystalline wax. It is mentioned in EP 20577 that his composition, applied onto a support such as a wall is appropriate as a protection coating against bill-sticking, penetration and hooking of graffitis and/or paint and against adherence of dust and various polluting agents.

DE19743566 A1 relates to a permanent coating, more precisely to a wax based anti-graffiti coating (I) for subsequent application to exterior and/or interior surfaces comprises at least a microcrystalline polypropylene, polyethylene or polytetrafluoroethylene based wax with a water insoluble binding agent. The amount of binding agent is typically 70 –90 percent by weight.

#### ANTI-FOULING TREATMENT OF SHIP HULLS.

The attachment and growth of marine fouling organisms to ships, marine structures etc. cause considerable problems, and various antifouling paints are in use for controlling the attachment and growth of marine fouling organisms.

A common type of antifouling paint is that which contains a biocidal agent dispersed in a suitable binder or a mixture of binders. During use the biocidal agent will dissolve and be released to the surrounding water and will thus provide an antifouling property.

In another type of antifouling paint an antifouling agent, which is chemically bound to a binder gradually, dissolves or hydrolyzes in water to release the antifouling agent.

A paint of this type is based on acrylic polymers in which carboxyl groups have been esterified with organotin groups. During use the polymers will be

hydrolyzed in sea water to release free trialkyltin compounds, acting as an antifouling agent

5 During recent years increasing restrictions have been made with respect to the use of biocidal agents in paints. There is accordingly a need for antifouling coatings, which do not exhibit these undesired properties.

US5814172 relates to a method of inhibiting marine growth on a structure exposed to a submarine environment, which comprises:

10 forming a sheet having a portion comprised of a biocide particulate having an average particle size diameter of greater than 5 microns dispersed in a polymerized first resin which is thermoplastic; the sheet portion having isotropic mechanical properties and being inelastically elongatable within the plane of the sheet;

15 adhering the sheet to the surface of the structure in combination with stretching the sheet to thereby permanently elongate the sheet in the plane of the sheet, to provide a barrier to the submarine environment; wherein, a portion of the biocide particulate in the sheet is exposed to the submarine environment.

20

EP 643657 A1 relates to a vessel brought forward in a fluid medium meeting a resistance of flow due to friction against the surrounding medium.

25 EP 643657 A1 deals with the problem how to reduce overgrowth and the frictional resistance between a vessel in movement and the surrounding medium.

30 According to EP 643657 A1 this problem is solved by a vessel or other marine construction comprising a coating in the form of an anti-fouling fiber flock comprising synthetic fibers having lengths between 0.5 and 5 mm and no anti-fouling toxic chemicals, electrostatically applied to at least a portion of surfaces thereof which are intended to come into contact with water, at a



density of 50 to 300 fibers per square mm and wherein said fibers are adhered essentially perpendicular to said surfaces.

5 EP 643657 A1 further relates to a method of preventing overgrowth on surfaces under the water line of vessels and other marine constructions, comprising:

applying an adhesive to underwater surfaces thereof,  
electrostatically applying a fiber flock, comprising synthetic fibers having lengths between 0.5 and 5 mm and no anti-fouling toxic chemicals, to at least  
10 a portion of the underwater surfaces, said fiber flock being adhered essentially perpendicular to said surfaces with said adhesive, at a density of 50 to 300 fibers per square mm.

15 EP 426904 A1 relates to a method for applying a coating to a substrate, in particular the outer surfaces of ships' hulls in order to protect them from fouling by exposure to marine organisms in a submerged aquatic environment, whereby the coating consists of polymerized fluorocarbon material which is thermally fused to the substrate, for example by means of a coherent form of radiation, e.g. a laser beam, whereby the fluorocarbon  
20 coating absorbs sufficient energy to melt and pass sufficient energy to heat the substrate at and near the interface, to bond the coating and the substrate interface.

25 According to a preferred embodiment, the fluorocarbon material is electrostatically sprayed onto the substrate and is then thermally fused to the substrate.

FR 2157074 relates to a method for protecting i.a. outer surfaces of ships' hulls from fouling by which these surfaces are coated with a coating based  
30 on a fluor carbon resin, such as polytetrafluorethylene.

US 4895881 relates to an anti-fouling composition for coating on a surface intended to be submerged in water comprising a binder, from 1 to 50% of

polytetrafluoroethylene particles, based on the dry weight of the composition, and from 5 to 95%, based on the dry weight of the composition, of an antifouling agent selected from the group consisting of copper metal and copper and zinc compounds, and also comprising a liquid dispersion medium, including at least one halogenated hydrocarbon, the polytetrafluoroethylene particles being dispersed in said liquid dispersion medium.

This coating composition may further contain additional amounts of binders, for instance epoxy resins and other binders of a thermoplastic or of a curable type, which are suitable in combination with fluorocarbon polymers.

These coatings may be applied in different manners, for instance with a paint brush, a roller, by spraying, dipping, flow coating and it is mentioned in US 4895881 that these coatings may even be melted (sintered) on the substrate through heating, for instance over 280 °C, such as 300-315 °C, during 1-20 minutes, for instance 5-10 minutes, or flame sprayed.

## 2. DISCLOSURE OF THE INVENTION

### Object of the Invention

It is an object of the present invention to provide an improved method of treating a surface, in particular to provide an improved method of providing a surface with a protecting coating.

In particular, it is an object of the present invention to provide improved methods of

1. providing a surface with an essentially permanent anti-graffiti coating;
2. providing a surface with an essentially permanent coating protecting against pollution and corrosion; and

3. providing an under water structure, e.g. a ship hull, with an essentially permanent anti-fouling coating.

- 5 Another object of the present invention is to provide a coating composition, in particular an anti-graffiti coating composition, which is inexpensive to manufacture, easy to apply, and environmentally safe in use.

Further objects appear from the description elsewhere.

10

#### Statement of Invention

According to an aspect of the present invention, there is provided a method of treating a surface comprising the steps of

15

- providing a coating composition comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase;

20

- applying said coating composition to the surface;
- evaporating said liquid phase from the applied coating composition; and

25

- subjecting said dried, applied coating composition to a heating treatment to coalesce said wax particles.

30

In this text the term "polyolefin" is intended to designate: "A polymer prepared by the polymerization of olefins as the sole monomers, copolymers thereof as well as oxidized and or halogenated, in particular fluorinated derivates thereof".

The term "a mixture of polyolefin waxes" is intended to designate: "A macroscopically homogeneous mixture of two or more different species of polymer, including cases, where the blends are homogeneous on scales smaller than several times visual optical wavelengths".

5

"Coalesce" and "coalescence" is intended to designate: "The formation of a coherent phase from an incoherent phase of separate particles by fusion or growing together of the particles".

10 According to another aspect of the present invention, there is provided a method of providing a surface with a protecting coating by

15 - applying a coating composition in the form of a suspension comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase to the surface;

- evaporating said liquid phase from the applied coating composition;

20 - subjecting said dried, applied coating composition to a heating treatment to raise the temperature of the dried coating composition to bring said particles of a polyolefin wax or of a mixture of polyolefin waxes into a coalescing state allowing said wax particles to provide a continuous coating of the surface; and

25

- allowing said heat treated coating composition to consolidate to a protective coating.

30 The liquid phase should be based on a liquid or a mixture of liquids which are readily vaporizable at a relatively low temperature, i.e. about 50 to 110°C; environmentally acceptable; and suitable for carrying a suspension of particles of polyolefin wax.

The evaporation step can be carried out by allowing the applied coating composition to evaporate at room/ambient temperature, but heat may also be applied using well-known heating apparatus.

- 5 The heating treatment by which the wax particles are brought into a coalescing state can be carried out using well-known heating apparatus, e.g. using IR radiation or hot air or hot gas.

10 According to preferred embodiments of these methods the liquid phase of the coating composition has a boiling point or a boiling point range lower than the melting point or melting point range of the particles of the polyolefin wax or of the mixture of polyolefin waxes.

15 Hereby it may be obtained that liquid phase is essentially evaporated before the temperature of the wax particles becomes so high that they enter into the coalescing state, i.e. before the continuous coating of the surface is formed.

20 The melting point or melting point range of the particles of the polyolefin wax or of the mixture of polyolefin waxes may preferably be between 60 and 250 °C, in particular between 90 and 140 °C.

According to preferred embodiments the liquid phase of the coating composition is organic.

25 The liquid phase of the coating composition may consist essentially of a member of the group consisting of ethers, esters, ketones, alcohols and mixtures thereof.

30 It may comprise an alcohol, preferably ethyl alcohol, and optionally water, whereby the concentration of water, calculated on weight basis, in the liquid phase may be up to 50 %.

According to other preferred embodiment the liquid phase of the coating composition may be essentially aqueous.

The coating composition may, calculated on weight basis, contain:

5

- polyolefin wax/mixture of polyolefin waxes 1 - 25 %, preferably 9
- 13 %, - liquid phase 99 - 75 %, preferably 91 - 87 %.

10 Further, the coating composition may comprise one or more auxiliary agents selected from the group consisting of diluting agents, dispersing agents, conservation agents, emulsifying agents, and colouring agents, whereby the coating composition, calculated on weight basis, may contain up to 10% auxiliary agents.

15 The colouring agents may be selected from colouring agents based on dyes or pigments.

According to other preferred embodiments

20 - the coating composition is consisting essentially of particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase;

25 - the coating composition is consisting essentially of particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid organic or aqueous phase and one or more auxiliary agents selected from the group consisting of diluting agents, dispersing agents, conservation agents, emulsifying agents, and colouring agents;

30 - the polyolefin wax or the components in the mixture of polyolefin waxes suspended in the coating composition are selected from the group consisting of polyethylene waxes, polypropylene waxes and oxidized and/or halogenated, in particular fluorinated polyethylene and polypropylene waxes,

preferably having a degree of polymerisation between 8 and 100, in particular between 20 and 80.

5 According to another preferred embodiment the polyolefin wax or, if a mixture of polyolefin waxes is desired, one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polyethylene wax, whereby the particle size of the polyethylene wax may be between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ , and the melting point of the polyethylene wax may be between 70 and 10 200°C, preferably between 90 and 150°C, in particular between 90 and 120°C.

15 According to another preferred embodiment the polyolefin wax or, if a mixture of polyolefin waxes is desired, one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polypropylene wax, whereby the particle size of the polypropylene wax may be between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ , and the melting point of the polypropylene wax may be between 70 and 250°C, preferably between 100 and 180°C, in particular between 100 20 and 140°C.

25 According to another preferred embodiment the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polytetrafluorethylene wax.

However, polytetrafluorethylene wax is preferably used in mixtures or alloys with other polyolefin waxes.

30 The particle size of the polytetrafluorethylene wax may be between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ , and the melting point of the polytetrafluorethylene wax may be between 250

and 360°C, preferably between 260 and 330°C, in particular between 280 and 320°C.

5 The application of the coating composition can be carried out using any suitable application technique including brushing, wiping, or rolling according to a preferred embodiment the coating composition is applied to the surface by spraying.

10 When the method is used as protection treatment against graffiti the coating composition is applied in an amount effective to prevent graffiti markings applied to the coated surface from penetrating through the protective coating to the underlying surface.

15 When the method is used as protection treatment against attack by aggressive gases or liquids the coating composition is applied in an amount effective to prevent the aggressive gases or liquids contacting the coated surface from penetrating through the protective coating to the underlying surface.

20 According to a preferred embodiment the coating composition is applied to the surface in an amount of 50 to 350 ml per m<sup>2</sup>.

25 The amount of the applied coating composition is determined by the porosity and nature of the surface to be treated or protected. Further, the weight percentage of the polyolefin wax/mixture of polyolefin waxes in the coating composition is also determined by the porosity and nature of the surface to be treated or protected.

30 Typical concentrations and amounts of the applied coating composition appears from the following table 1:



Table 1

	Composition (g wax powder/litre liquid)	Coverage (ml coating composition/m <sup>2</sup> )
Porous substrates	140 - 150	125 - 350
Steel/painted surface	10 -15	50 - 85
Stone, marble, slate etc.	65 - 75	60 - 170

- 5 According to another aspect of the present invention, there is provided a coating composition comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase.

10 The coating compositions are prepared by suspending a selected amount of polyolefin wax or the mixture of polyolefin waxes in a selected amount of a selected liquid, e.g. water or ethyl alcohol, if desired in the presence of dispersion agents, in a manner known per se, e.g. as further disclosed in the examples.

- 15 Preferred embodiments are disclosed in claims 28 to 49

According to other aspects of the present invention, there is provided a

- use of the coating composition according to any of claims 27 to 49 for  
20 treating a surface;
- use of the coating composition according to any of claims 27 to 49 for providing a surface with an essentially permanent anti-graffiti coating;

- use of the coating composition according to any of claims 27 to 49 for providing a surface with an essentially permanent coating protecting against pollution and corrosion; and

- 5    - use of the coating composition according to any of claims 27 to 49 for providing an under water structure, e.g. a ship hull, with an essentially permanent anti-fouling coating.

According to other aspects of the present invention, there is provided an

10

- article of manufacture comprising a structure with a surface coated by the method according to any of claims 1 to 26; and

- 15    - article of manufacture comprising a structure with a surface coated by use of the coating composition according to any of claims 27 to 49.

The invention will now be illustrated by way of the following examples which are for the purpose of illustration only and are in no way as to be considered limiting. In the following examples all parts and percentages are by weight  
20    and all temperatures and degrees are Celsius unless otherwise indicated.

### 3. EXAMPLES

The materials used in the examples were as follows:

25

#### Waxes:

Carnauba Wax: Carnauba Wax, Type CARNAUBA CARE 100, from Brenntag Nordic, Melting point: 80 – 86 °C, Acid value (ASTM D 1386): 2- 7.

30

Ceresin wax: Ceresin wax powder, DAVOSI, Specific gravity: 0.8 g/cm<sup>3</sup>, Boiling point approx. 300°C, Melting point 57 – 59 °C.

PE (1): Polyethylene wax powder, DAVOSI, Average particle size: 3-5  $\mu\text{m}$ ,  
Specific gravity: 0.96-0.98  $\text{g/cm}^3$ , Drop forming point (DGF-M-III 3): 125°C

- 5 PE (2): Polyethylene wax powder, Shamrock S 394, N1, Average particle  
size: 18  $\mu\text{m}$ ,  
Specific gravity: 0.95  $\text{g/cm}^3$ , DSC melt point: 113°C, Softening point: 99°C

- 10 PE (3): Polyethylene wax powder, Shamrock S 394, SP 5, Average particle  
size: 18  $\mu\text{m}$ ,  
Specific gravity: 0.95  $\text{g/cm}^3$ , DSC melt point: 113°C, Softening point: 99°C

- 15 PP (1): Polypropylene copolymer wax powder, Shamrock S 363, Average  
particle size: 5  $\mu\text{m}$ , Specific gravity: 0.94  $\text{g/cm}^3$ , DSC melt point: 140°C,  
Softening point: 68°C

- 20 PTFE (1): 60 % aqueous dispersion of polytetrafluorethylene, Shamrock  
FLUORO AQ 60, Average particle size: 2-3  $\mu\text{m}$ , pH: 7-8, Apparent density:  
1.47

Solvents/Acids:

- 25 Oil: Paraffin oil pharmaceutical grade, Parafluid type PL501A from Parafluid  
Mineralölgesellschaft GmbH, Hamburg, Germany

Acetone: Commercial grade, Borup Kemi AS, Denmark

Xylene: Commercial grade, Borup Kemi AS, Denmark

- 30 White Spirit: Commercial grade, Borup Kemi AS, Denmark

Alcohol: Denaturated Ethyl alcohol, Commercial grade, Borup Kemi AS,  
Denmark

5 Concentrated Sulphuric Acid: 96% Commercial grade, Borup Kemi AS,  
Denmark

Water: Tap water

Auxiliary agents:

10

Coloring Agent: Aquatop Teknomix 2990 from Teknos Denmark AS

Comparison tests:

15

Comparison example A (carnauba wax)

Surface: Concrete plate 90 x 160 mm.

20

A mix of oil and Carnauba wax (90:10) was heated in small container until melting of the wax. Immediately after the mix was applied by brush on to the concrete plate.

25 Dried for 24 hours at 20 degrees C, 65% rel. humidity.

Then a solvent based graffiti paint was sprayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% rel. humidity.

30 Then the graffiti was subjected to high pressure (water, 90 -100 bar) cleaning

Result: The graffiti could not be removed by high pressure (water 90 -100 bar) cleaning.

Comparison example B (ceresin wax)

5 Surface: Concrete plate 90 x 160 mm.

A mix of oil and Ceresin wax (90:10) was heated in a small container until melting of the wax. Immediately after the mix was applied by brush on to the concrete plate in a thin layer.

10

Dried for 24 hours at 20 degrees C, 65% rel. humidity.

Then a solvent based graffiti paint was sprayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% rel. humidity.

15

Then the graffiti was subjected to high pressure (water, 90 -100 bar) cleaning

Result: The graffiti could not be removed by high pressure (water 90 -100 bar) cleaning.

20

Examples according to the present invention

The following coating compositions were prepared and used in the following examples:

25

Coating composition	PE(1) (PPW)	PE(2) (PPW)	PE(3) (PPW)	PP(1) (PPW)	PTFE(1) (PPW)	Alcohol (PPW)
1	10					1000
2		10				1000
3			10			1000
4				10		1000
5					10	1000

Example 1 (PE (1) Davosi – Polyethylene wax powder)

Surface: Glass plates 70x150 mm; Steel plates 150x150 mm      Quantity  
5      applied:  $6.7 \cdot 10^{-5} \text{ ml/cm}^2$

The wax mix was applied by airless spray gun on to the steel plates and  
dried for 3 hours. It was observed that the surface of the test specimen was  
covered by a white wax powder. Then the surface of the test specimen were  
10      heated by a Ripack 2000 gas heated gun until the white wax powder was  
melting and become transparent.

Cured for 12 hours at 20 degrees C, 65% relative humidity

15      Then solvent based graffiti paint was spayed on to the coated surface and  
cured for 24 hours at 20 degrees C, 65% relative humidity.

Observations:

20      The graffiti was easily removed by a brush and lukewarm water as well as by  
high pressure cleaning (water, 90-100 bar).

Similar tests were carried out on the following test specimen substrates:

- |    |                                  |              |
|----|----------------------------------|--------------|
| 25 | 1. Steel plates with car lacquer | 100 x 100 mm |
|    | 2. Concrete plates               | 100 x 100 mm |
|    | 3. Slate plates, smooth,         | 100 x 100 mm |
|    | 4. Slate plates, rough,          | 100 x 100 mm |
|    | 5. Granite plates, smooth        | 100 x 100 mm |
| 30 | 6. Granite plates, rough         | 100 x 100 mm |
|    | 7. Marble plates, smooth         | 100 x 100 mm |
|    | 8. Sand stone plates,            | 100 x 100 mm |

**Observations for all layers:**

The graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (90-100 bar).

5

On one of the test steel specimen up to 50 repetitive layers of graffiti paint was applied and removed on the same wax coating.

- 10 To test the wear resistance on another of the test specimen steel plates 1000 repetitive grindings (of 30 seconds each) made with a 3M hard, green kitchen sponge. Then solvent based graffiti paint was sprayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% relative humidity.

- 15 **Further observation:**

On non heated surfaces the wax coating was easily removed by a cloth or a soft sponge.

20

On one of the sandstone specimens, coated on one side only, a solvent based graffiti paint was sprayed on as described in the above on both the coated side as well as on the non coated side.

- 25 **Observations:**

On the coated side the graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (water, 90-100 bar). On the non coated side the graffiti could not be removed.

30

Then concentrated sulphuric acid was applied in a thin layer on approx. 50% of the coated side.

90 minutes later the acid was removed by clean water and the surface was dried.

Observations:

5

No visible attack from the sulphuric acid was detected.

1 hour later a new layer of graffiti paint was applied and cured as previously described.

10

Observations:

The graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (90-100 bar).

15

On the non coated side a similar test with sulphur acid was made.

Observations:

20 The graffiti paint was diluted/destroyed by the acid, which has also started to deteriorate the surface of the sandstone.

25 To investigate the effect of the heating treatment of the wax composition a number of specimens with a diameter of approx. 60mm and a thickness of up to 15 mm were molded by heating up approx. 15 g of wax powder in a metal cup.

30 4 specimens were dyed into brown respectively blue, green and black colors.

The molded specimens were submerged into various liquids such as:

1. Concentrated Sulphuric Acid



2. Alcohol
3. White Spirit
4. Xylene
5. Acetone
- 5 6. Tap water

Observations after 21 days:

10 No damages or any kind of visible deterioration of the specimens were detected. No coloring of the liquids was observed.

1 colored specimen was submerged into sea water for 18 months.

Observation:

15 No damages or any kind of visible deterioration were detected.

Test for diffusion opennness

20 To evaluate the diffusion opennness a test was carried out on a plate of concrete (100 x 150 x 12mm) treated as previously described on all sides with the exception of a circle with a diameter of 40mm on one of the sides.

Exactly on the said circle a glass tube with a diameter of 40mm and a height of 600 mm was glued on to the steel plate with silicone.

25

The tube was filled with 500 mm clean water and the plate was placed on 4 pieces of wood in each corner to raise it from the table plate.

Observation:

30

After 5-10 seconds the water began to drip very fast through the coated concrete plate.

Test on traffic sign:

On a special light reflection treated traffic sign a test was carried out to verify whether the degree of light reflection was reduced by our coating.

5

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

10

Cured for 12 hours at 20 degrees C, 65% relative humidity

Light test carried out during the night time proved that the coating do not have any adverse effect of the light reflection.

15

Test of discoloration on coated surfaces:

Observations from a wide range of various test of numerous substrates has showed that change in colors and/or gloss is extremely small. Even on non painted steel only an extremely limited darkening and increase of gloss can be observed.

20

Test of protection against moss and algae:

Observations from a range of tests on concrete and steel have showed that the coating has a pronounced effect to avoid or strongly reduce growth of moss and algae in moist and wet environments.

25

30 Example 2 (PE (2) Shamrock S 394, N1 – Polyethylene wax powder)

Surface: Glass plates 70x150 mm; Steel plates 150x150 mm      Quantity  
applied:  $6.7 \cdot 10^{-5}$  ml/cm<sup>2</sup>

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

Cured for 12 hours at 20 degrees C, 65% relative humidity

Then solvent based graffiti paint was spayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% relative humidity.

Observations:

The graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (water, 90-100 bar).

Example 3 (PE (3) Shamrock S 394, SP5 – Polyethylene wax powder)

Surface: Glass plates 70x150 mm; Steel plates 150x150 mm. Quantity applied:  $6.7 \cdot 10^{-5}$  ml/cm<sup>2</sup>

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

Cured for 12 hours at 20 degrees C, 65% relative humidity

Then solvent based graffiti paint was spayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% relative humidity.

Observations:

The graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (water, 90-100 bar).

5

Example 4 (PP (1)) Shamrock S 363, – Polypropylene wax powder)

Surface: Glass plates 70x150 mm; Steel plates 150x150 mm. Quantity applied:  $6.7 \cdot 10^{-5}$  ml/cm<sup>2</sup>

10

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

15

Cured for 12 hours at 20 degrees C, 65% relative humidity

Then solvent based graffiti paint was spayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% relative humidity.

20

Observations:

The graffiti was easily removed by a brush and lukewarm water as well as by high pressure cleaning (water, 90-100 bar).

25

Comparison example D PTFE (1) Shamrock FLUORO AQ 60 – 60% aqueous dispersion of polytetrafluorethylene powder

30 The wax dispersion diluted by 50% of water by airless spray gun was applied on to the steel plates and dried for 3 hours. Then the surface of the test specimen was heated by a Ripack 2000 gas heated gun.

Cured for 12 hours at 20 degrees C, 65% relative humidity

Then solvent based graffiti paint was sprayed on to the coated surface and cured for 24 hours at 20 degrees C, 65% relative humidity.

5

Observation:

The graffiti was only partly removed by a brush and lukewarm water as well as by high pressure cleaning (90-100 bar), but the dispersion could not bond  
10 to the substrate and was easily removed by the said cleaning methods.

Conclusion:

The product is not useable for the intended purpose, presumably because  
15 the applied wax particles have not coalesced to a protective coating.

Example 4 (DISPERSION TEST)

20 To investigate the behaviour of PE-wax powders such powders were suspended in the carrier (Ethanol), and a series of test specimens (see below) were observed in an electronic microscope.

Test Specimens – Glass plates:

25

1. Davosi wax, PE (1) – mixed with Ethanol and sprayed on to a glass plate.
2. Davosi wax, PE (1) – mixed with Ethanol and sprayed and heated on to a glass plate.
- 30 3. Shamrock type S-394 SP5 wax – mixed with Ethanol and sprayed on to a glass plate
4. Shamrock type S-394 SP5 wax – mixed with Ethanol and sprayed and heated on to a glass plate.

5. Shamrock type S-394 N1 wax - mixed with Ethanol and sprayed on to a glass plate
6. Shamrock type S-394 N1 wax - mixed with Ethanol and sprayed and heated on to a glass plate

5

Observations:

From the observations it was evident that the wax powder was not dissolved in the ethanol. It was clear that the wax particles were intact in all the specimens where the various wax powders were mixed with ethanol.

10

Likewise it seems to be evident that after the heat treatment the wax particles were converted into a transparent, homogeneous, permanent very stable heat and chemical resistant sheet.

15

ADDITIONAL TESTS FOR ANTI-FOULING APPLICATIONSExample 5 (Test with GRP-plate)

20

A gel-coated GRP plate approx. 100 x 400 mm was treated on 50% of one side.

25

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

30

Cured for 12 hours at 20 degrees C at 65% relative humidity.

The test specimen was submerged into seawater in the Leisure Boat Marine in Bogense, Denmark for 30 days.

Observations after 30 days:

The non treated/coated surface was green from algae, sticking strongly to the surface.

5

The treated/coated surface seemed to be like slightly dusty after curing in open air, but the very fine particles (not algae) were easily removed by a soft hand.

10 Example 6 (Test with steel plate)

Test specimen: A black steel plate, dimensions: 150 x 150 mm.

50% of the one side (approx. 75 x 150mm) was coated.

15

The wax mix was applied by airless spray gun on to the steel plates and dried for 3 hours. Then the surface of the test specimen were heated by a Ripack 2000 gas heated gun until the white wax powder was melting and become transparent.

20

Cured for 12 hours at 20 degrees C, 65% relative humidity

The test specimen was submerged into seawater in the Leisure Boat Marine in Bogense, Denmark for 30 days.

25

Observations after 30 days:

The non treated/coated surface was heavily rusty and barnacled.

30 The treated surface was slightly dirty (easily removed by a brush and clean water), but the plate otherwise was not attacked by rust or algae.

## Claims

## 1. A method of treating a surface comprising the steps of

- 5                   - providing a coating composition comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase;
- applying said coating composition to the surface;
- 10               - evaporating said liquid phase from the applied coating composition; and
- subjecting said dried, applied coating composition to a heating
- 15               treatment to coalesce said wax particles.

## 2. A method of providing a surface with a protecting coating by

- applying a coating composition in the form of a suspension
- 20               comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase to the surface;
- evaporating said liquid phase from the applied coating composition;
- 25               - subjecting said dried, applied coating composition to a heating treatment to raise the temperature of the dried coating composition to bring said particles of a polyolefin wax or of a mixture of polyolefin waxes into a coalescing state allowing said
- 30               wax particles to provide a continuous coating of the surface; and
- allowing said heat treated coating composition to consolidate to a protective coating.



3. The method according to any of claims 1 to 2 wherein the liquid phase of the coating composition has a boiling point or a boiling point range lower than the melting point or melting point range of the particles of the polyolefin wax  
5 or of the mixture of polyolefin waxes.

4. The method according to any of claims 1 to 3 wherein the liquid phase of the coating composition is organic.

10 5. The method according to any of claims 1 to 4 wherein the liquid phase of the coating composition consists essentially of a member of the group consisting of ethers, esters, ketones, alcohols and mixtures thereof.

15 6. The method according to any of claims 1 to 5 wherein the liquid phase of the coating composition comprises an alcohol, preferably ethyl alcohol.

7. The method according to claim 6 wherein the liquid phase of the coating composition comprises an alcohol, preferably ethyl alcohol, and water

20 8. The method according to claim 7 wherein the concentration of water, calculated on weight basis, in the liquid phase is up to 50 %.

25 9. The method according to any of claims 1 to 3 wherein the liquid phase of the coating composition is essentially aqueous.

10. The method according to any of claims 1 to 9 wherein the coating composition, calculated on weight basis, contains:

30 - polyolefin wax/mixture of polyolefin waxes 1 - 25 %, preferably 9 - 13 %, - liquid phase 99 - 75 %, preferably 91 - 87 %.

11. The method according to any of claims 1 to 10 wherein the coating composition comprises one or more auxiliary agents selected from the group

consisting of diluting agents, dispersing agents, conservation agents, emulsifying agents, and colouring agents.

12. The method according to claim 11 wherein the coating composition,  
5 calculated on weight basis, contains up to 10% auxiliary agents.

13. The method according to any of claims 1 to 10 wherein the coating  
composition is consisting essentially of particles of a polyolefin wax or of a  
mixture of polyolefin waxes suspended in a liquid phase

10

14. The method according to any of claims 1 to 12 wherein the coating  
composition is consisting essentially of particles of a polyolefin wax or of a  
mixture of polyolefin waxes suspended in a liquid organic or aqueous phase  
and one or more auxiliary agents selected from the group consisting of  
15 diluting agents, dispersing agents, conservation agents, emulsifying agents,  
and colouring agents.

15. The method according to any of claims 1 to 14 wherein the polyolefin wax  
or the components in the mixture of polyolefin waxes suspended in the  
20 coating composition are selected from the group consisting of polyethylene  
waxes, polypropylene waxes and oxidized and/or halogenated, in particular  
fluorinated polyethylene and polypropylene waxes, preferably having a  
degree of polymerisation between 8 and 100, in particular between 20 and  
80.

25

16. The method according to claim 15 wherein the polyolefin wax or one of  
the components in the mixture of polyolefin waxes suspended in the coating  
composition is a polyethylene wax.

30 17. The method according to claim 16 wherein the particle size of the  
polyethylene wax is between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  
 $\mu\text{m}$ , in particular between 4 and 20  $\mu\text{m}$ .

18. The method according to any of claims 16 to 17 wherein the melting point of the polyethylene wax is between 70 and 200°C, preferably between 90 and 150°C, in particular between 90 and 120°C.

5 19. The method according to claim 15 wherein the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polypropylene wax.

10 20. The method according to claim 19 wherein the particle size of the polypropylene wax is between 0.1 and 100 µm, preferably between 2 and 25 µm, in particular between 4 and 20µm.

15 21. The method according to any of claims 19 to 20 wherein the melting point of the polypropylene wax is between 70 and 250°C, preferably between 100 and 180°C, in particular between 100 and 140°C.

20 22. The method according to claim 15 wherein the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polytetrafluorethylene wax.

23. The method according to claim 22 wherein the particle size of the polytetrafluorethylene wax is between 0.1 and 100 µm, preferably between 2 and 25 µm, in particular between 4 and 20µm.

25 24. The method according to any of claims 22 to 23 wherein the melting point of the polytetrafluorethylene wax is between 250 and 360°C, preferably between 260 and 330°C, in particular between 280 and 320°C.

30 25. The method according to any of claims 1 to 24 wherein the coating composition is applied to the surface by spraying.

26. The method according to any of claims 1 to 25 wherein the coating composition is applied to the surface in an amount of 50 to 350 ml per m<sup>2</sup>.

5 27. A coating composition comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase.

28. The coating composition according to claim 27 wherein the liquid phase of the coating composition has a boiling point or a boiling point range lower than the melting point or melting point range of the particles of the polyolefin wax or of the mixture of polyolefin waxes.  
10

29. The coating composition according to any of claims 27 to 28 wherein the liquid phase of the coating composition is organic.

15 30. The coating composition according to any of claims 27 to 29 wherein the liquid phase of the coating composition consists essentially of a member of the group consisting of ethers, esters, ketones, alcohols and mixtures thereof.

20 31. The coating composition according to any of claims 27 to 30 wherein the liquid phase of the coating composition comprises an alcohol, preferably ethyl alcohol.

25 32. The coating composition according to claim 31 wherein the liquid phase of the coating composition comprises an alcohol, preferably ethyl alcohol, and water.

33. The coating composition according to claim 32 wherein the concentration of water, calculated on weight basis, in the liquid phase is up to 50 %.

30

34. The coating composition according to any of claims 27 to 28 wherein the liquid phase of the coating composition is essentially aqueous.

35. The coating composition according to any of claims 27 to 34 wherein the coating composition, calculated on weight basis, contains:

- 5                   - polyolefin wax/mixture of polyolefin waxes 1 - 25 %, preferably 9  
                  - 13 %, - liquid phase 99 - 75 %, preferably 91 - 87 %.

36. The coating composition according to any of claims 27 to 35 wherein the coating composition comprises one or more auxiliary agents selected from the group consisting of diluting agents, dispersing agents, conservation  
10 agents, emulsifying agents, and colouring agents.

37. The coating composition according to claim 36 wherein the coating composition, calculated on weight basis, contains up to 10% auxiliary agents.

15 38. The coating composition according to any of claims 27 to 35 wherein the coating composition<sup>1</sup> is consisting essentially of particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase

39. The coating composition according to any of claims 27 to 37 wherein the  
20 coating composition is consisting essentially of particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid organic or aqueous phase and one or more auxiliary agents selected from the group consisting of diluting agents, dispersing agents, conservation agents, emulsifying agents, and colouring agents.

25 40. The coating composition according to any of claims 27 to 39 wherein the polyolefin wax or the components in the mixture of polyolefin waxes suspended in the coating composition are selected from the group consisting of polyethylene waxes, polypropylene waxes and oxidized and/or  
30 halogenated, in particular fluorinated polyethylene and polypropylene waxes, preferably having a degree of polymerisation between 8 and 100, in particular between 20 and 80.

41. The coating composition according to claim 40 wherein the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polyethylene wax.

5     42. The coating composition according to claim 41 wherein the particle size of the polyethylene wax is between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ .

10    43. The coating composition according to any of claims 41 to 42 wherein the melting point of the polyethylene wax is between 70 and 200°C, preferably between 90 and 150°C, in particular between 90 and 120°C.

15    44. The coating composition according to claim 40 wherein the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polypropylene wax.

20    45. The coating composition according to claim 44 wherein the particle size of the polypropylene wax is between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ .

46. The coating composition according to any of claims 44 to 45 wherein the melting point of the polypropylene wax is between 70 and 250°C, preferably between 100 and 180°C, in particular between 100 and 140°C.

25    47. The coating composition according to claim 40 wherein the polyolefin wax or one of the components in the mixture of polyolefin waxes suspended in the coating composition is a polytetrafluorethylene wax.

30    48. The coating composition according to claim 47 wherein the particle size of the polytetrafluorethylene wax is between 0.1 and 100  $\mu\text{m}$ , preferably between 2 and 25  $\mu\text{m}$ , in particular between 4 and 20 $\mu\text{m}$ .

49. The coating composition according to any of claims 47 to 48 wherein the melting point of the polytetrafluorethylene wax is between 250 and 360°C, preferably between 260 and 330°C, in particular between 280 and 320°C.

5 50. Use of the coating composition according to any of claims 27 to 49 for treating a surface.

51. Use of the coating composition according to any of claims 27 to 49 for providing a surface with an essentially permanent anti-graffiti coating.

10

52. Use of the coating composition according to any of claims 27 to 49 for providing a surface with an essentially permanent coating protecting against pollution and corrosion.

15 53. Use of the coating composition according to any of claims 27 to 49 for providing an under water structure, e.g. a ship hull, with an essentially permanent anti-fouling coating.

20 54. An article of manufacture comprising a structure with a surface obtainable by the method according to any of claims 1 to 26.

55. An article of manufacture comprising a structure with a surface obtainable by use of the coating composition according to any of claims 27 to 49.

25

30

5

10

15 **ABSTRACT**

A method of treating a surface comprising the steps of providing a coating composition comprising particles of a polyolefin wax or of a mixture of polyolefin waxes suspended in a liquid phase; applying said coating  
20 composition to the surface; evaporating said liquid phase from the applied coating composition; and subjecting said dried, applied coating composition to a heating treatment to coalesce said wax particles.



Patent- og  
Varemærkestyrelsen

25 JULI 2002

Modtaget

OVERDRAGELSE

DANMARK

Undertegnede

Knud Erik Kristian Møller Jensen  
Præstetoften 3  
5471 Søndersø

overdrager herved retten til

- ☒ at søge patent på en af mig/os gjort opfindelse
- ☐ patent-/brugsmodelansøgning nr.
- ☐ patent/brugsmodel nr.
- ☐ at søge mønster i henhold til vedhæftede afbildning
- ☐ mønsterans. nr.
- ☐ mønsterreg. nr.
- ☐ varemærkeans. nr.
- ☐ varemærkerereg. nr.

benævnt

"Method of treating a surface, coating compositions and use thereof and coated surfaces obtainable by the use."

til

J. P. Hansens Eftf. ApS  
Præstetoften 3  
5471 Søndersø

*J. P. Hansens Eftf. ApS*  
95/7-02

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# Patentansøgning

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PVS



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Helgeshøj Allé 81  
2830 Taastrup

Tlf. 43 50 80 00  
Fax 43 50 80 01  
Postgiro 8 989 923  
E-post pvs@dkpto.dk  
www.dkpto.dk

Læs venligst vejledningen til de enkelte punkter

2. Ansøgers fuldmægtigs referencenr.:

3. International indleveringsdag:

☐ Kapitel I

Internationalt ansøgningsnr.:

☐ Kapitel II

4. Ansøger (fulde navn, adresse og evt. CVR-nr.):

☐ Flere ansøgere på bagsiden

LJ Maskinteknik  
Baunehøj 90, Vester Nebel  
6040 Egtved

Telefon: 7555 4469

Telefax: 7555 4496

5. Fuldmægtig (navn og adresse):

Telefon:

Telefax:

6. Opfinder (fornavn, efternavn, adresse):

Lars Jørgensen  
Baunehøj 90, Vester Nebel  
6040 Egtved

6a. Opfinder (fornavn, efternavn, adresse):

☐ Flere opfindere på bagsiden

7. Opfindelsens benævnelse:

Anordning til udmåling og markering eller  
bearbejdning på et arbejdsbælte

8. Prioritetspåstand(e):

☐ Flere prioritetspåstande på bagsiden

Dato	Land	Nr.
Dato	Land	Nr.
Dato	Land	Nr.

9. ☐ Ansøgningen omfatter deponering af en prøve af biologisk materiale, som angivet i patentlovens § 8a, stk. 1.

10. ☐ Ansøgningen omfatter en sekvensliste.

11. ☐ Ansøgningen er fremkommet ved deling eller udskillelse.

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☐ fuldmagt

☐ overdragelsesdokument

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Lars Jørgensen

2. maj 2002

Patent- og  
Varemærkestyrelsen

01 MAJ 2002

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LJ Maskinteknik  
Baunehøj 90, Vester Nebel  
6040 Egtved

Anordning til udmåling og markering eller bearbejning på et arbejdssemne.

Opfindelsen angår en anordning til udmåling og markering eller bearbejdning på et arbejdssemne. Anordningen består af 2 på hinanden vinkelretstående linealer, som skærer hinanden i et fælles nulpunkt. På linealerne er anbragt forskydelige land, som muliggør specifik placering af nulpunktet i forhold til 2 rette og vinkelret på hinanden stående kanter eller én ret kant og et punkt på et arbejdssemne. I linealernes nulpunkt er placeret et værktøjshoved for montering af det værktøj, som skal anvendes til markering af det specifikke punkt eller som skal udføre en bearbejdning i det specifikke punkt og dets nærhed.

5 Ved den kendte udførelse af tilsvarende arbejdsopgaver anvendes et flertal af redskaber, såsom linealer, båndmål, vinkler og løse kørnere eller skriveredskaber/ridseredskaber til bestemmelse og markering af det specifikke punkt og løse bearbejdningssværktøjer til bearbejdning i og omkring det specifikke punkt.

Ved opfindelsen tilvejebringes en anordning, som samler nævnte redskaber og værktøjer i ét. Derved forenkles processen med udmåling og markering af det specifikke punkt samt udførelsen af en eventuel bearbejdning.

15 Dette opnås ifølge opfindelsen ved at samle måle- og markeringsredskaber eller arbejdsværktøjer i én anordning bestående af 2 på hinanden vinkelretstående linealer, som skærer hinanden i et fælles nulpunkt, og på hvilke er anbragt forskydelige land, som muliggør specifik placering af nulpunktet i forhold til 2 rette og vinkelret på hinanden stående kanter eller én ret kant og et punkt på et arbejdssemne, og i hvilket nulpunkt er placeret et værktøjshoved for montering af det redskab eller værktøj, som skal anvendes til markering af det specifikke punkt eller til bearbejdning i det specifikke punkt og dets nærhed.

20 I en særlig udførelsesform for anordningen ifølge opfindelsen er den ene eller begge linealer udført udskydelig, eventuelt som et båndmål, således at der kan arbejdes på arbejdssemner af varierende størrelse.

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Modtaget

**Patentkrav**

1. Anordning til udmåling og markering af et specifikt punkt på et arbejdssemne eller til bearbejdning i det specifikke punkt og dets nærhed kendetegnet ved, at de til operationen nødvendige redskaber og værktøjer er samlet i én anordning bestående af 2  
5 på hinanden vinkelretstående linealer, som skærer hinanden i et fælles nulpunkt, på hvilke linealer er anbragt forskydelige land, og i hvilke linealers skæringspunkt er placeret et værktøjshoved for montering af det redskab eller værktøj, som skal anvendes til markering af det specifikke punkt eller som skal udføre en bearbejdning i det specifikke punkt eller dets nærhed.
- 10 2. Anordning ifølge krav 1, kendetegnet ved, at den ene eller begge linealer er udført udskydelig.

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Modtaget

**Sammendrag**

**Anordning til udmåling og markering eller bearbejdning på et arbejdssemne.**

- Anordningen består af 2 på hinanden vinkelretstående linealer, som skærer hinanden i et**
- 5 fælles nulpunkt. På linealerne er anbragt forskydelige land, som muliggør specifik**
- placering af nulpunktet i forhold til 2 rette og vinkelret på hinanden stående kanter eller**
- én ret kant og et punkt på et arbejdssemne. I linealernes nulpunkt er placeret et**
- værktøjshoved for montering af det værktøj, som skal anvendes til markering af det**
- specifikke punkt eller som skal udføre en bearbejdning i det specifikke punkt og dets**
- 10 nærhed.**